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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,236	01/15/2002	Dimitar V. Dimitrov	169.12-0526	6372
<div>164      7590      07/02/2007 KINNEY &amp; LANGE, P.A. THE KINNEY &amp; LANGE BUILDING 312 SOUTH THIRD STREET MINNEAPOLIS, MN 55415-1002</div>				
			EXAMINER TUGBANG, ANTHONY D	
			ART UNIT 3729	PAPER NUMBER
			MAIL DATE 07/02/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Sp

<b>Office Action Summary</b>	<b>Application No.</b> 10/050,236	<b>Applicant(s)</b> DIMITROV ET AL.	
	<b>Examiner</b> A. Dexter Tugbang	<b>Art Unit</b> 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-18 is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8,21 is/are rejected.
- 7) ☒ Claim(s) 3-5 and 22-32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. In light of the Petition (filed on September 13, 2005) and the Decision on the Petition (filed on February 17, 2006), the previous Office Action (Final Rejection, mailed on June 14, 2005) has been vacated.

Claims 1 through 32 are pending. In view of the decision on the petition, the restriction requirement between Claims 1 through 18 and 21 through 32 has been withdrawn. Claims 1 through 18 and 21 through 32 will be examined on the merits as follows.

2. However, the restriction requirement is maintained between the group (process) belonging to Claims 1 through 18 and 21 through 32 and the group (product) belonging to the group of Claims 19 and 20.

Claims 19 and 20 continue to stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 4, 2004.

### ***Response to Arguments***

3. The applicant(s) arguments, see Appeal Brief, filed on November 14, 2005, with respect to the rejection(s) of Claim 1 under 35 U.S.C. 102(e) have been fully considered and are persuasive. The examiner agrees with the applicant(s) that the prior art does not teach the order of steps of first defining a stripe height back edge of a magnetoresistive sensor of the

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magnetoresistive reader; and then subsequently defining a reader width of the sensor. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of following.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Bharthulwar 5,847,904.

Bharthulwar discloses a method of making a MR reader comprising: first defining a stripe height back edge (back edge of MR layer active region 24) by forming a magnetoresistive sensor (e.g. 22 in Fig. 2C) of the MR reader; and then subsequently defining a reader width (“track width” – TW) of the magnetoresistive sensor by forming current contacts (e.g. conductors 34, 36) over the magnetoresistive sensor as the reader width (e.g. TW) is not defined until the current contacts are formed over the magnetoresistive sensor and the distance is set between the current contacts (e.g. 34, 36, col. 4, lines 35-55).

It is noted that the “stripe height” is defined as the width of the MR layer active region 24 perpendicular to the easy axis (e.g. 54). Thus, the stripe height back edge is defined as the back edge of the MR layer active region 24.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bharthulwar in view of Fontana et al 6,609,948.

Bharthulwar discloses the claimed manufacturing method as relied upon in Claim 1 above. Bharthulwar does not teach that the step of defining the stripe height back edge of the magnetoresistive sensor further comprises: depositing a plurality of sensor layers, selectively patterning a first photoresist layer on the magnetoresistive sensor layers, the first photoresist layer leaving exposed a first region of the magnetoresistive sensor layers; removing the exposed first region of the magnetoresistive sensor layers; and removing the first photoresist layer.

Fontana shows a patterning process that includes depositing magnetoresistive sensor layers (e.g. 206, Fig. 4 and block 300 of Fig. 13), or a stack of sensor layers; selectively patterning a first photoresist layer (e.g. 230, 232) on the magnetoresistive sensor layers (Fig. 11A and 11B), the first photoresist layer leaving exposed a first region of the magnetoresistive sensor layers; removing the exposed first region (e.g. region of layers 206 outside of 230, 232) of the magnetoresistive sensor layers (col. 6, lines 45-60); and removing the first photoresist layer (see Fig. 11C).

It would have obvious to one of ordinary skill in the art at the time the invention was made to have defined the stripe height back edge of Bharthulwar by utilizing the patterning

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process of Fontana, to provide a highly accurate means of defining the stripe height of the magnetoresistive sensor between the stripe height back edge and the ABS.

8. Claims 6 through 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bharthulwar in view of Shouji et al 5,722,157.

Bharthulwar discloses the claimed manufacturing method as relied upon in Claim 1 above, further including forming current contacts. Bharthulwar does not teach that the current contacts are formed by depositing them adjacent opposite edges of the magnetoresistive sensor, depositing a gap layer on the current contacts and the magnetoresistive sensor; and depositing a top shield on the gap layer.

Shouji shows a composite head forming process that includes: depositing current contacts (e.g. 30, 31 in Fig. 8D) adjacent opposite edges of the magnetoresistive sensor (e.g. 28); depositing a gap layer (e.g. 32 in Fig. 8E) on the current contacts and the magnetoresistive sensor; and depositing a top shield (e.g. 34 in Fig. 8F) on the gap layer (all of which is discussed at col. 6, lines 53-67). The purpose of the composite head forming process of Shouji allows a magnetic head to be formed with a magnetoresistive sensor and an induction magnetic head so that the overall magnetic head can read information and record information (col. 1, lines 15-21 and col. 6, lines 29-33).

It would have obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Bharthulwar by utilizing the composite head forming process of Shouji, to positively form a magnetic head that can both read and record information.

***Allowable Subject Matter***

9. Claims 9 through 18 are allowed.
10. Claims 3 through 5 and 22 through 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. The following is a statement of reasons for the indication of allowable subject matter.

The prior art does not all of the limitations of the claimed invention including defining the reader with, after the stripe height back edged is defined, by: selectively patterning a second photoresist layer on the magnetoresistive layers, the second photoresist layer leaving exposed a second region of the magnetoresistive sensor layers; and removing the exposed second region of the magnetoresistive sensor layers (as required in each of Claims 3, 9 and 22).

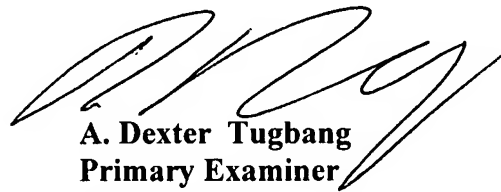
***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

May 3, 2007